

PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

The Construction of Aerofoil Blades for Radial Flow Fans

We, MACARD SCREWS LIMITED, a South African Company, of 6th Floor, Commercial Exchange Building, 7 Harrison Street, Johannesburg, South Africa, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to aerofoil section of the kind which are shells fabricated from sheet material, such as are used for radial flow fans.

The blades of high-speed fans which propel air having entrained abrasive particles, such as grit-laden mine air or flue gases, are subject to considerable erosion especially at the nose of the blade, but at the tail also. The object of this invention is to provide a blade that is more resistant to wear than those presently in use.

According to the invention, there is provided a blade of aerofoil section of the kind which are shells fabricated from sheet metal, such as are used for radial flow fans, in which the nose and tail of the blade terminate in inserted formations of wear-resistant material, shaped to complete the contour of the blade.

As an example, nickel steel such as is used for the manufacture of axles may be mentioned as a suitable material for said inserted formations.

Preferably, each inserted formation is recessed to receive the shell of the blade, with the outer surfaces of the shell and inserted formations curvilinear.

An embodiment of the invention is illustrated in the accompanying drawing in which the only Figure is a vertical section through the blade, with the central part omitted as being irrelevant for illustration of the invention.

In the drawing, 10 indicates the shell of the

blade, which is made of sheet metal bent to the required contour. 12 are a series of webs within the cavity of the blade, welded to the shell 10.

The sheet metal shell 10 is discontinued at the nose and tail of the blade, and the blade is completed by inserted formations or inserts 14, 16 at the nose and tail respectively. Each insert is made of solid, wear-resistant metal, such as nickel steel, and is shaped to provide a body 18 or 20 that completes the contour of the blade.

Beyond the body the inserts are provided with shanks 22 and 24 respectively that fit snugly into the open ends of the shell 10. When so fitted, the outer surfaces of the shells and the bodies of the inserts are curvilinear.

The inserts are held in position by welding as shown at 26.

The inserts are not only highly resistant to erosion but can continue to operate even after substantial erosion has taken place. If an insert is eroded beyond the permitted limit, it may be removed and replaced by a new insert.

The manufacture of the blade of the invention has the desirable feature that the profile of the nose and tail can easily be profiled; whereas in conventional practice the bending of sheet metal to the required contour of nose and tail is a troublesome operation.

WHAT WE CLAIM IS:—

1. A blade of aerofoil section of the kind which are shells fabricated from sheet metal, such as are used for radial flow fans, in which the nose and tail of the blade terminate in inserted formations of wear-resistant material, shaped to complete the contour of the blade.

2. The blade of claim 1 in which each inserted formation is recessed to receive the shell of the blade, with the outer surfaces

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of the shell and inserted formations curvilinear.

described with reference to the accompanying drawing.

3. The blade of claim 1 or 2 in which the shell and the inserted formations are welded together.

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4. An aerofoil blade, substantially as herein

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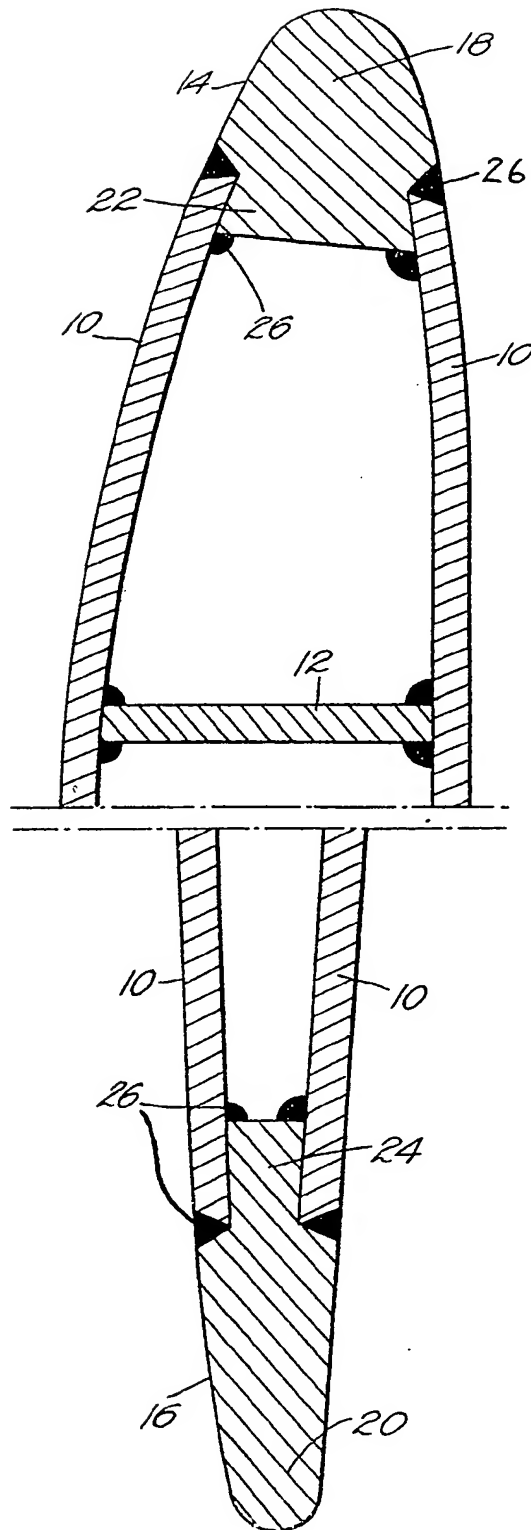
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1 SHEET

*This drawing is a reproduction of
the Original on a reduced scale.*



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